EXHIBIT B

An Analysis of Actions and Events that Took Place During and Around Grizzly Bear Capture and Handling Operations in the Kitty Creek Drainage in May-June 2010

A Report Prepared for The Spence Law Firm, LLC,
PO Box 548 • 15 South Jackson Street
Jackson, Wyoming 83001

Prepared by:
Marc Cattet, DVM, PhD
Canadian Cooperative Wildlife Health Centre
Western College of Veterinary Medicine
University of Saskatchewan
Saskatoon, Saskatchewan
CANADA S7N 5B4

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1) Initial Contact with Spence Law Firm and Agreement to Work on Case.

My first contact with The Spence Law Firm took place on March 22, 2011, when Emily R. Rankin, PC phoned me at my Saskatoon office. In this discussion, Emily asked me first if I was aware of the incident involving the fatal mauling of Mr. Erwin Evert by a grizzly bear that had been recently captured by researchers. I told her that I had heard some general discussion of it within the sphere of bear researchers. Emily then provided me with a brief overview of The Spence Law Firm's involvement with this incident, and then asked if I had any conflict of interest or other reason that would prevent me from assisting The Spence Law Firm in reviewing documents pertaining to the Interagency Grizzly Bear Study Team (IGBST) trapping of grizzly bears in the Kitty Creek drainage of the Shoshone National Forest, Wyoming in May and June of 2010, and the subsequent mauling of Mr. Evert. I indicated that I had no conflict of interest and that I would be willing to review these documents, but that I would not commit at this time to further involvement beyond this step.

I received a package containing several documents[56][57][58][59][60] by courier a few days later. After reviewing the documents, I had a follow-up phone discussion with Emily, as well as Mark L. Aronowitz of The Spence Law Firm, on April 29, 2011, at which time I indicated that I would be willing to continue assisting them with the case.

2) Statement of Qualifications and Experience

a) Education

Degree	Field of Study	Years	Institution
B.Sc.	Wildlife biology	1978 – 1982	University of Guelph, Guelph, ON, Canada
M.Sc.	Zoology	1984 – 1988	University of Alberta, Edmonton, AB, Canada
D.V.M.	Veterinary medicine	1989 – 1993	University of Guelph, Guelph, ON, Canada
Ph.D.	Veterinary pathology	1994 – 2000	University of Saskatchewan, Saskatoon, SK, Canada

b) Familiarity with capture and handling of grizzly bears

I have been involved with the study of bears (black, polar, and grizzly) since 1981. This has included varying periods of field research on bears in most of the 31 years with the exception of 1989-1993 when I was attending veterinary school. My experience with capture and handling, categorized by species, and by methods of capture, is as follows:

- *Black bears* – 1981, 1996, and 1999-2012, by leg-hold snare and culvert trap
- *Polar bears* – 1994-1998 and 2002-2009, by remote drug delivery from helicopter
- *Grizzly bears* – 1999-2012 by leg-hold snare, culvert trap, and remote drug delivery from helicopter

Since 1997, a significant portion of my research has focused toward better understanding the physiological and health consequences of capture and handling of wild species, mostly bears, and to finding ways of improving the techniques of capture and handling with the goal of minimizing adverse consequences for wild species. Research publications arising from this focused study are listed below in sub-section e).

c) Familiarity with the use of Telazol®

I have used Telazol® for the anesthesia of wildlife since 1994. Prior to 2000, I used either Telazol® alone as the sole anesthetic combination or in combination with an alpha-2 agonist drug (medetomidine or xylazine). Since 2000, my use of Telazol® has been restricted to its use in combination with either medetomidine or xylazine. This preference stemmed from research that I had conducted which identified important safety and health advantages of these combinations over using Telazol® alone which included (i) higher potency (thus, smaller volumes) (ii) quicker induction, (ii) stronger analgesia (pain-killing effect), (iv) better muscle relaxation, and (v) partial- to full-reversibility following the administration of an alpha-2 antagonist drug (yohimbine or atipamezole).

d) Familiarity with the effects of Telazol® on bears

I studied the behavioral and physiological effects of Telazol® and/or Telazol® / alpha-2 adrenergic drug combinations in bears from 1995 to 2003. This research culminated in several peer-reviewed scientific publications concerning black bears (2), polar bears (5), and grizzly bears (2), that are listed below in sub-section e).

e) Publications pertaining to the capture and handling of wildlife, including the effects of Telazol®

Cattet MRL, Caulkett NA, Polischuk SC. 1997. Reversible immobilization of free-ranging polar bears with medetomidine-zolazepam-tiletamine and atipamezole. Journal of Wildlife Diseases 33:611-617.

Caulkett NA, Cattet MRL. 1997. Physiological effects of medetomidine-zolazepam-tiletamine immobilization in black bears. Journal of Wildlife Diseases 33:618-622.

Cattet MRL, Caulkett NA, Streib KA, Torske KE, Ramsay MA. 1999. Cardiopulmonary response of anesthetized polar bears to suspension by net and sling. Journal of Wildlife Diseases 35: 548-556.

Cattet MRL, Caulkett NA, Polischuk SC, Ramsay MA. 1999. Anesthesia of polar bears (Ursus maritimus) with zolazepam-tiletamine, medetomidine-ketamine, and medetomidine-zolazepam-tiletamine. Journal of Zoo and Wildlife Medicine 30: 354-360.

Caulkett NA, Cattet MRL, Caulkett JM, Polischuk SC. 1999. Comparative physiologic effects of Telazol, medetomidine-ketamine, and medetomidine-Telazol in polar bears (Ursus maritimus). Journal of Zoo and Wildlife Medicine 30: 504-509.

Caulkett NA, Cattet MRL, Cantwell S, Cool N, Olsen W. 2000. Anesthesia of wood bison with medetomidine-zolazepam/tiletamine and xylazine-zolazepam/tiletamine combinations. Canadian Veterinary Journal 41: 49-53.

Caulkett NA, Cattet MRL. 2002. Anesthesia of bears. In: D. Heard (Ed.). Zoological Restraint and Anesthesia. International Veterinary Information Service (www.ivis.org), Ithaca, New York.

Cattet MRL, Caulkett NA, Stenhouse GB. 2003. Anesthesia of grizzly bears using xylazine-zolazepam-tiletamine. Ursus 14(1): 88-93.

Cattet MRL, Christison K, Caulkett NA, Stenhouse GB. 2003. Physiologic responses of grizzly bears to different methods of capture. Journal of Wildlife Diseases 39(3): 649-654.

Cattet MRL, Caulkett NA, Lunn NJ. 2003. Anesthesia of polar bears using xylazine-zolazepam-tiletamine or zolazepam-tiletamine. Journal of Wildlife Diseases 39(3): 655-664.

Cattet MRL, Caulkett NA, Wilson C, Vandenbrink T, Brook RK. 2004. Intranasal administration of xylazine to reduce stress in elk captured by net gun. Journal of Wildlife Diseases 40(3): 562-565.

Cattet, MRL, Bourque, A, Elkin, BT, Powley, KD, Dahlstrom, DB, and NA Caulkett. 2006. Evaluation of the potential for injury with remote drug delivery systems. Wildlife Society Bulletin 34(3):741-749.

Cattet, M., J. Boulanger, G. Stenhouse, R. A. Powell, and M. J. Reynolds-Hogland. 2008. An evaluation of long-term capture effects in ursids: implications for wildlife welfare and research. Journal of Mammalogy 89: 973-990.

Cattet, M., G. Stenhouse, and T. Bollinger. 2008. Exertional myopathy in a grizzly bear (Ursus arctos) captured by leghold snare. Journal of Wildlife Diseases 44: 973-978.

Cattet M, Obbard ME. 2010. Use of hyaluronidase to improve chemical immobilization of free-ranging polar bears (Ursus maritimus). Journal of Wildlife Diseases 46(1): 246-250.

f) Field research

I have conducted field research on an annual basis since 1981, with the exception of 1990-1993 when I was attending veterinary school. This has involved anywhere from 3 weeks to 4 months per year in the field. Most of this research has occurred in Canada (Alberta, Manitoba, Northwest Territories, Nunavut, Ontario, and Saskatchewan), but more recently I am also collaborating in field research taking place in Alaska and in Sweden. Much of my research experience has focused on the three species of North American bears, i.e., black bears (*Ursus americanus*), polar bears (*U. maritimus*), and grizzly bears (*U. arctos*). However, I have also participated in research involving a range of other wild species that include beluga whales, harp seals, wood bison, elk, white-tailed deer, wolf, and reindeer.

3) Analysis of Actions and Events that took place During and Around Grizzly Bear Capture and Handling Operations in the Kitty Creek Drainage in May-June 2010

In this section, I identify actions and events that took place during or around grizzly bear capture and handling operations in the Kitty Creek Drainage during May-June 2010 that are applicable to my area of knowledge and experience. Following a summary statement of each action or event, I provide supporting details and citations to the appropriate documents. The citations are denoted by superscript numbers that correspond to the complete citations which are listed in section 5). After the supporting details, I give my opinion on what occurred and, if required, what I believe should have occurred. Where required, I also provide supporting details and citations for opinions. Each opinion provided in this report is offered to a reasonable degree of scientific probability. An overarching goal of this analysis is to formulate answers to two related questions:

Did the recent capture and handling of Bear #646 make it more likely to attack someone than if it had not been recently captured and handled?

If the answer to this question is "yes", what reasonable actions should have been taken to prevent the deaths of Mr. Erwin Evert and Bear #646?

a) **Regarding notifying local residents/cabin owners of research activities in advance of, or during, grizzly bear capture and handling operations:** *With the exception of a casual discussion with a couple occupying one of the fourteen Kitty Creek cabins, there does not appear to have been any steps taken by the IGBST to inform and warn local residents of the danger that existed either in advance of, or during, grizzly bear capture and handling operations.*

Supporting information: Chad Dickinson recalled a casual conversation with the occupants of one of the cabins, Mr. and Mrs. Alquist, on May 31st during which he informed them that he and Seth Thompson were conducting either grizzly bear trapping or grizzly bear research in the Kitty Creek drainage.[1a] However, Chad did not recall providing any details regarding what "trapping" entailed or where the trapping was occurring.[1b] Aside from this first conversation with Mr. and Mrs. Alquist, Chad stated that "Other than placing signs at our trap sites, we did not contact Kitty Creek residents."[1c] Chad also recalled speaking with Shoshone National Forest wildlife biologist Andy Pils, but did not recall Andy asking that he notify Kitty Creek Cabin residents of the IGBST's trapping activities in the Kitty Creek drainage.[1r]

Seth Thompson stated that the only other way (aside from posting signs all around the trap sites) that he personally informed the public was through a casual encounter with

the occupants (Dennis and Mary Ann Alquist) of one of the uppermost cabins on Kitty Creek.[4a] Seth recalled that the couple asked what he and Chad were doing and they told them specifically that they were trapping grizzly bears.[4b] However, Seth did not recall Chad or he providing any details regarding what "trapping" entailed or where the trapping was occurring.[4c] Seth also was not aware of any steps taken by Chad or anyone else to inform or warn residents in the area about their capture and handling operation.[4d] Although Seth was not certain of the date, he confirmed that this discussion occurred sometime during the first hitch[4a], which was between May 27th and June 3rd.[58e] Although at the time of this report Dennis Alquist's deposition has not yet been transcribed, I rely on Emily Rankin and Mark Aronowitz who inform me that Dennis testified he encountered the two researchers on the Kitty Creek trail system on two separate occasions and was never provided any kind of warning or information about their grizzly bear capture and handling activities.

Opinion 1: *The IGBST trapping crew willfully failed to notify local residents/cabin owners of their research activities in advance of, or during, grizzly bear capture and handling operations.*

Chad Dickinson and Seth Thompson were aware of the dangers involved with grizzly bear capture and handling, and their obligations to protect both the public and the animals that they capture, through review of the documentation possessed by the IGBST (for example, see Appendix 3 of the Investigation Team Report [58k]), as well as through participation in training courses (for example, see Bear Handling Workshop from March 2010[6]). Based on statements recorded at their respective depositions, Chad and Seth were aware of the dangers of encountering a grizzly bear at a trap site both prior to capture and/or handling [1e][1o][4h], as well as following handling.[1n][1o][1p][1q][4r] Chad and Seth appeared also to have made a conscious decision to deliberately avoid notifying local residents/cabin owners of their grizzly bear capture operations or, if confronted and asked, to keep the details to a minimum.[1d][4g] This decision was made despite the close proximity of trap sites to cabins, e.g., "Site #3 was 3700 feet (straight-line distance) from the uppermost cabin in the Kitty Creek drainage...".[58d][58m]

Charles Schwartz, as the IGBST leader in 2010, acknowledged in his deposition that there are three levels of safety concerns that must be considered with grizzly bear capture and handling operations – the safety of the animal, the safety of the trappers, and the safety of the public.[2b] However, he did not support notifying the public of IGBST grizzly bear capture operations.[2c][2d][2f] Charles was concerned this would increase the likelihood of individuals entering trap sites out of curiosity or ill-intent. However, although he was anecdotally aware of a few previous incidents where the public entered trap sites, he was not able to quantify the risk, e.g., number of occurrences per unit time. Further, he did not provide any evidence to show that the occurrence of the

public entering trap sites was linked with the occurrence of public notification. Finally, notifying the public that grizzly bear capture operations will occur in a large circumscribed area is quite different from specifically disclosing trap sites.

b) **Regarding the placement of closure signs:** *Aside from signs placed in close proximity to the trap sites, signs were not placed anywhere else.*

Supporting Information: Chad Dickinson stated that "Other than placing signs at our trap sites, we did not contact Kitty Creek residents."[1c]

Seth Thompson stated that "So we posted signs around all of the trap sites. And the only other way that I personally informed the public was through contact with the cabin occupants at one of the uppermost cabins on Kitty Creek."[4a] Seth added further that "The only signs that I'm aware of, and these are the ones that Chad and I put up, are the ones immediately surrounding the trap sites."[4e] Seth also confirmed that there were no signs of the capture operations placed at the trailhead nor anywhere along either the decommissioned road or the main Kitty Creek trail or at the intersections at where they would take the trail to sites #1 and #3 off either the main trail or the decommissioned road.[4f]

At each trap site, closure signs were placed in the area during trapping operations.[58b] Two very different signs were used by the IGBST field crew in the Kitty Creek drainage.[58c] The first sign said "Danger – Bear Trap in the Area. The area behind this sign is temporarily closed. The closure is in effect from ___ to ___."[58r] This sign was used at all trap sites.[58d] The other sign type said "Closed. Area behind this sign is closed to human travel – Dangerous Bear".[58u] This sign was only used at trap site #2 because the field crew was out of copies of the first sign.[58d]

Opinion 2: *The trapping crew willfully failed to notify local residents/cabin owners of their research activities in advance of, or during, grizzly bear capture and handling operations.*

I view 3b) as a subcategory of 3a), hence my opinions are the same here too. The placement of closure signs is merely one of several methods that should be used to provide notification to local residents/cabin owners that grizzly bear capture and handling operations are, or will be, occurring in the area. Other methods to consider should include press/media releases and face-to-face meetings with local residents. By limiting the placement of closure signs to just the immediate vicinity of trap sites ensures that, if a member of the public comes across a closure sign, he/she may be at greater risk of encountering a bear than if they had come across a sign at a major trail head or at an access point along the periphery of the study area.

c) **Regarding the method used to capture Bear #646:** *Bear #646 was captured by leg-hold snare set using a pail-set configuration.*

Supporting Information: The trap site where bear #646 was captured, Site #3, comprised four snare sets, all within approximately 30 meters of each other.[58u] Bear #646 was captured by a leg-hold snare in a pail-set configuration.[58w][66][67] The configurations used for the three other leg-hold snares at this site were a checkerboard, a cubby, and another pail-set.[8]

Opinion 3: *The possibility of physical and physiological injury to a captured grizzly bear, with consequent impairment of mobility, was high with capture by leg-hold snare regardless of configuration (pail set, trail set, or cubby set).*

The IGBST possessed several published research reports that describe the welfare concerns and consequences of using leg-hold snares as a capture method for grizzly bears.[13][14] Further, the concerns and consequences of capture by leg-hold snare were addressed in a presentation by Gordon Stenhouse at the March 2010 Bear Handling Workshop.[6b]

The IGBST, and specifically Chad and Seth, knew or should have known that the risk of physical injury to a leg-hold snared grizzly bear is high due to:

- Exertional stress on the snared limb and associated musculature (e.g., chest, shoulder, etc.) in attempting to escape restraint by the snare (Note re: Bear #646 – "This one was more active than 588" and "The bear kept moving and charging, bit at the cable quite a lot" in Chad Dickinson's field notes[19]),
- Skin lacerations and abrasions sustained while attempting to escape restraint by the snare (Note re: Bear #646– "Large open wound behind left shoulder, 3" x 2" at widest. Numerous scars and fight wounds on head and neck. Both old and new." on the tagging form[58w][66][67]),
- Tightening of the snare cable around the forelimb or forepaw (Note re: Bear #646 – "Right front foot capture, some swelling" on the tagging form[58w][66][67]),
- Damage to teeth and jaw (i.e., chips, fractures, and/or dislocation) as a consequence of biting at the snare cable (Note re: Bear #646– "The bear kept moving and charging, bit at the cable quite a lot" in Chad Dickinson's field notes[19]),
- Self-mutilation of the snared forelimb resulting in loss of claw(s), digit(s), or the entire forefoot,

- Attack by another bear while restrained by snare (Note – "Large open wound behind left shoulder, 3" x 2" at widest. Numerous scars and fight wounds on head and neck. Both old and new." on tagging form[58w][66][67], or
- Any combination of these factors.

Physiological injury can occur as a consequence of many of these factors[11][13][14]), and may include:

- Increased and sustained release of stress hormones (epinenephrine, norepinenephrine, cortisol),
- Elevated body temperature, i.e., hyperthermia,
- Accumulation of lactic acid and lowering of blood pH, i.e., lactic acidosis,
- Exertional (capture) myopathy, i.e., irreversible muscle damage,
- Lowering of blood glucose, i.e., hypoglycemia, and
- Loss of body water, i.e., dehydration.

The likelihood and severity of some of these physical/physiological injuries can increase with the duration of time restrained by the snare. In this regard, Seth Thompson indicated it was possible that Bear #646 could have been restrained in the snare for 18-20 hours prior to handling.[4i]

I found several unsubstantiated statements regarding capture by leg-hold snare in the Northern Rocky Mountain Science Center Policy for Utilization of Animals in Research[58g] that are inconsistent with what has been reported in the published literature or what the IGBST had heard at scientific presentations. These statements are as follows:

- *"Struggles of the restrained individual in a foot-snare are likely painful, but bears quickly learn the limits of the restraint."* – I would suggest that an extensive review of the images/video that was recorded by the IGBST using cameras at trap sites[2e] would not support this statement. For example, I have asked that Emily Rankin provide on a disk a video of a snare capture that demonstrates the opposite. Although not all bears will react as shown in the video, the behavior shown by this bear occurs with enough frequency to be labeled as "common".
- *"The most common type of injury is minor abrasions or lacerations. Rarely have we encountered more severe injuries that were a result of the capture. To date we have not had a broken limb as a result of our trapping efforts in either snares or culvert traps."* – These statements can only be substantiated by blood analysis (e.g., serum muscle enzymes, white blood cell counts) and radiographic analysis. Our ability to assess injuries by physical examination alone is extremely limited.

- *"Since that initial assessment [risk assessment completed in 1986], experts in the use of snare techniques have demonstrated low injury rates and zero mortality for this technique in the ecosystem."* – Citations to where these experts report their findings in the peer-reviewed scientific literature were not provided.

d) **Regarding the administration of anesthetic drug to Bear #646:** *While restrained by leg-hold snare, Bear #646 was immobilized with an anesthetic drug combination administered by remote drug delivery involving a 5-ml dart projected a distance of approximately 7-10 yards by a gas- (CO_2) powered pistol into its left shoulder.*

Supporting information: Given that the initial volume of anesthetic drug (Telazol®) administered to Bear #646 was 5 ml[58w][66][67], I assume that the volume capacity of the dart was at least 5 ml. Chad Dickinson administered the drug by remote drug delivery using a drug-filled dart projected a distance of approximately 7 yards by a gas- (CO_2) powered pistol into the left shoulder of Bear #646.[10][19][58w][66][67]

Seth Thompson stated that when he and Chad approached to dart Bear #646, they were probably within 10 yards of the bear.[4]

Opinion 4: *This was an appropriate standard operating procedure to conduct under the circumstances provided that the drug was administered using a slow injection-type dart.*

Darts used for remote drug delivery are broadly divided into two categories based on the method of drug expulsion. Rapid injection-type darts, also called powder explosive powered darts, use a black powder firing cap to provide the force required to discharge the drug from the dart. The injection occurs within milliseconds and can cause considerable tissue damage.[74][76a][79b] Slow injection-type darts, also called compressed gas darts, use compressed air or liquid butane to provide the force required to discharge the drug from the dart. Depending on drug volume, the injection occurs within 0.5-1.0 seconds and is non-traumatic.[74][76a][79b] The large difference in potential between these two categories of darts for causing significant injury prompted the Canadian Council on Animal Care (CCAC) to view the use of rapid injection- and slow injection-type darts under different categories of invasiveness.[69] The use of rapid injection-type darts falls under Category D, methods which cause moderate to severe distress or discomfort. The use of slow injection-type darts falls under Category C, methods which cause minor stress or pain of short duration.

A question that I cannot answer with absolute certainty from the available documents is was the initial dose administered to Bear #646 using a rapid injection-type dart or a slow injection-type dart? This is pertinent because of the greater likelihood of injury (deep injection and contamination of wound tract, tearing of subcutis and subcutaneous

hemorrhage) with rapid injection-type darts.[74] Under question 5 in the Northern Rocky Mountain Science Center Policy for Utilization of Animals in Research[58h], the response statement says, "Initial applications of drugs are accomplished via remote injections using Palmer Cap-Chur darts, or Pneu-Darts fired from CO_2 pistols..." Although Pneu-Dart only manufactured rapid injection-type darts in 2010, Palmer Cap-Chur was manufacturing both types, so this does not clarify what type of dart was used by Chad Dickinson.

e) **Regarding the drug used to immobilize Bear #646:** *Bear #646 was immobilized using a 1:1 combination of zolazepam hydrochloride and tiletamine hydrochloride (packaged and sold commercially as Telazol® in North America, and as Zoletil® in Europe).*

Supporting information: Bear #646 was reported by Chad Dickinson to have been immobilized with a 1,425 mg dose of the commercial anesthetic drug combination known as Telazol® at a dosage of 3.4 mg/lb delivered as a single injection into the left shoulder.[58w][66][67] I calculated the dose by multiplying the drug concentration (i.e., strength of drugs used = 285 mg/ml) by the drug volume (i.e., 5.0 ml at 0906 hr). I calculated the dosage as the dose of drug administered (1,425 mg) divided by the measured body weight of the animal (425 lb).[58w][66][67]

Opinion 5: As of June 2010, *Telazol® was a poor drug choice given the knowledge and availability of better anesthetic drug combinations for the immobilization grizzly bears.*

The field of wildlife chemical immobilization (also called wildlife anesthesia) has progressed over time with the results of ongoing research and the availability of new and improved drugs. A major impetus in this progression has been to improve the quality of anesthesia for wild animals while also reducing potential impacts on their health and welfare.[79] This trend is also evident when reviewing the history of drugs used for the capture of North American bears, including grizzly bears.[37] Telazol® is an anesthetic combination of tiletamine hydrochloride and zolazepam hydrochloride that was developed in the late 1960's at Parke-Davis Laboratories. Although Telazol® is licensed by the U.S. Food and Drug Administration for use only in dogs and cats, it has been tested and used extensively in a wide range of domestic, laboratory, zoo, and wild animals since the early 70's.[77] The first reports on its use in brown bears (*Ursus arctos*; which includes grizzly bears) were published in the mid-70's and, by the late 80's, Telazol® was widely regarded as the drug-of-choice for the chemical immobilization of bears.[21] Its advantages relative to the use of other drug mixtures in bears at that time were that its anesthetic effects were highly predictable, it caused minimal depression of physiological function, and it could be administered safely over a wide range of dosages.[39] This label held until the end of the 90's when ongoing research identified

newer drug combinations with clear improvements over Telazol®. These improvements included:

- *Stronger analgesia (pain-killing effect) for potentially painful procedures:* The analgesic effect of Telazol® is weak and inadequate for some of the common procedures carried out on captured bears, e.g., tooth extraction, lip tattoo, application of ear-tags.[63][36][43][45][48][51]
- *Reversibility (capacity to abolish anesthetic effects by administration of an antagonist drug) to counter-act adverse physiological responses and/or promote recovery:* The effects of Telazol® cannot be reversed because, although the effects of zolazepam may be abolished with flumazenil (Anexate™), an antagonist drug for tiletamine does not exist.[25][28][30][42][44][47]
- *Shorter duration of recovery:* Bears anesthetized with Telazol® are known to have prolonged recoveries lasting many hours, especially if multiple doses of Telazol® are administered.[63][64][23][24][25][28][32][38][42][46][48][49][52]
- *Greater potency:* For larger bears, Telazol® must be administered in relatively large volumes (≥5 ml), which can result in loss of accuracy with remote injection systems (dart rifles and darts), as well as increased tissue trauma at the site of drug injection.[39][44][70][73][74]

The newer drug combinations that have superseded Telazol® as the drugs-of-choice for bears are primarily combinations of Telazol® with an alpha-2 adrenergic drug, either medetomidine (MZT) or xylazine (XZT).[79a][76b][22][27][33][40] Aside making improvements with respect to grizzly bear welfare, the drugs medetomidine and xylazine, as well as their antagonist drugs atipamezole and yohimbine, were readily available, known and utilized in 2010, and the cost of using MZT or XZT on a per lb body weight basis is less expensive than using Telazol® alone.[72]

Opinion 6: *There were minor errors in the reporting of the amount of drug used for Bear #646 on the IGBST Bear Tagging Form.*

Chad Dickinson immobilized Bear #646 with a 1,430 mg dose of the commercial anesthetic drug combination known as Telazol® at a dosage of 3.4 mg/lb delivered as a single injection into muscle and/or subcutis.[58w][66][67] I estimated this dose based on the fact that Chad reconstituted a vial of Telazol®, which contains 572 mg of active drug[31], with 1.6 ml of sterile water.[61] In my experience the lyophilized drug adds approximately 0.4 ml to the final drug volume[41], so reconstitution of a vial with 1.6 ml of sterile water would provide 2.0 ml of aqueous drug at a concentration of 286 mg/ml (i.e., 572 mg ÷ 2.0 ml), which agrees closely with Chad's estimate of 285 mg/ml.[58w][66][67] Since Bear #646 was immobilized with an initial injection of 5 ml of Telazol® at this concentration, the dose of active drug was 1,430 mg, i.e., 5 ml × 286 mg/ml. The dosage is calculated as

the dose of drug administered divided by the body weight of the animal. Given that the scale weight of Bear #646 was determined to be 425 lbs[58w][66][67], the initial dosage of Telazol® administered was 3.4 mg/lb, i.e., 1,430 mg ÷ 425 lb = 3.36 mg/lb. This dosage is within the range specified by the IGBST's drug protocol (3.2-3.6 mg/lb[15] or 3.6 mg/lb[65]), but less than recommended dosages in the peer-reviewed scientific literature (3.6-4.7 mg/lb[78], 5.0 mg/lb[34], and 4.1-5.2 mg/lb[41]). However, these recommended dosages are based largely on capture of grizzly bears by remote drug delivery from helicopter which is a method of capture that appears to require use of higher dosages than capture by leg-hold snare.[12]

Chad administered an additional 286 mg dose of Telazol® by hand (syringe and needle) to Bear #646 at the time (0915 hr) that it was deemed to be immobilized.[58w][66][67]

Chad administered a final 343 mg dose of Telazol® to Bear #646 at 39 minutes (0954 hr) following the onset of immobilization due to difficulties encountered during the tooth extraction.[58w][66][67] This additional dose brought the final dose up to 2059 mg, and the final dosage up to 4.8 mg/lb. My estimates of final dose (mg) and dosage (mg/lb) are approximately 10% less than what was reported on the IGBST Bear Tagging Form.[58w][66][67] This discrepancy is explained by Chad not taking into account the residual drug that remains in a reconstituted vial of Telazol® after drawing the content out with a syringe and needle.[61] However, this error is relatively small and unlikely to be of any consequence in interpreting or understanding the behavior and physiology of Bear #646 in response to chemical immobilization.

f) **Regarding the effects of multiple doses of Telazol® on Bear #646:** *The trapping crew administered three doses of Telazol® to Bear #646 over a 48-minute period.*

Supporting information: Provided under e) above.

Opinion 7: *The administration of three doses of Telazol® to Bear #646 over a 48-minute period more likely than not reduced the quality of anesthesia and extended the recovery period beyond the duration it would have been if the Telazol® was administered as a single dose.*

The peer-reviewed scientific literature reports that administration of Telazol® as multiple injections over an extended period (>15 minutes) will result in a reduction in the quality of anesthesia and a lengthening of the normal recovery period.[17][24][29][32] The administration of ketamine as a "top-up" drug is a recognized, alternative approach used for maintaining an adequate depth of anesthesia while avoiding the adverse effects of multiple injections of Telazol®.[23][24][79c]

g) **Regarding actions taken with Bear #646 after it was immobilized:** *Once immobilized, Bear #646 was subjected to various procedures over a period of 85 minutes. Although I could not find the exact sequence of procedures described in full detail in any single document, information provided from my review of multiple documents makes clear the following procedures were carried out:*

(i) *The trapping crew administered an additional 285 mg dose of Telazol® by hand (syringe and needle) to Bear #646 at the time that it was deemed to be immobilized.*

Supporting information: Bear #646 was administered an additional 285 mg dose of Telazol® by hand (syringe and needle) by Chad Dickinson at the time (0915 hr) it was deemed to be immobilized.[58w][66][67] Presumably, this additional dose was administered because Chad had deemed that Bear #646 was not adequately anesthetized to safely initiate carrying out the handling procedures.[4n]

Opinion 8: *Notwithstanding Opinion 7, this was an appropriate standard operating procedure to conduct under the circumstances.*

(ii) *The trapping crew "anchored" Bear #646 to a tree by a different snare cable than the capture snare.*

Supporting information: When Bear #646 was administered its second dose of Telazol®, it was also "anchored" to a tree by a different snare cable than the capture snare[15][1p][4o] and the capture snare was removed from the its right foot.

Opinion 9: *This was an appropriate standard operating procedure to conduct under the circumstances.*

(iii) *The trapping crew recorded the vital signs of Bear #646 throughout the handling period.*

Supporting information: The first measurements of respiration (12 breaths per minute) and rectal temperature (100.9°F [38.3°C]) were recorded 11 minutes following the onset of immobilization.[58w][66][67] It appears, however, that the capillary refill time (<2 seconds) was recorded once at 60 minutes (1015 hr) following the onset of immobilization. Further measurements of respiration and temperature were recorded at 22 (0937 hr), 41 (0956 hr), and 85 minutes (1040 hr) following the onset of immobilization.[58w][66][67] The respiratory rate had increased to

24 breaths per minute at the last recording, which was above the suggested range of 12-20 breaths per minute[16], but consistent with a decrease in the depth of anesthesia. The rectal temperature remained within normal range 98-102°F [36.7-38.9°C][16], but increased by 0.9°F [0.5°C] during the 75 minutes over which it was recorded.

Opinion 10: *The trapping crew failed to adequately monitor the vital signs of Bear #646 adequately.*

The purpose of recording vital signs is to evaluate an animal's response to anesthesia and to pre-empt any potential adverse responses by taking preventative action. For this to be effective, the measurements that are recorded should be indicative of several physiological functions (i.e., cardiovascular, respiratory, thermoregulatory) and should be repeated at frequent intervals to establish trends in physiological functions, e.g., every 5-15 minutes.

I could not find any information that was recorded regarding pulse rate, mucous membrane color, hemoglobin oxygen saturation, or the provision of supplemental oxygen as indicated in the capture protocol[15] in effect on 6/17/2010 and as specified in the Northern Rocky Mountain Science Center Policy for Utilization of Animals in Research.[58k] Further, the frequency of measurements was considerably less than the 5-15 minute intervals as recommended in the IGBST capture protocol.[15]

(iv) The trapping crew extracted a tooth from Bear #646.

Supporting Information: Seth Thompson, who previously expressed his need to improve his tooth extraction skills[53a], initiated the extraction procedure, but I was unclear as to whether he completed it or if Chad Dickinson took over. Either way, it appears there was some difficulty encountered in freeing the tooth such that the procedure took 20-30 minutes, instead of the usual 5 minutes.[1h][4l] In addition, the tooth may have been broken during the extraction attempt, in which case it would have been likely that the extraction would involve the removal of another tooth. These events would have caused increased stress and trauma to Bear #646

Opinion 11: *Although the extraction of a premolar from a captured bear is a standard operating procedure carried out for the purpose of determining age, a tooth was extracted from Bear #646 without adequate analgesia, i.e., pain-killing effect.*

The analgesic effect of Telazol® is poor and inadequate for some of the common procedures carried out on captured bears, e.g., tooth extraction, lip tattoo, application of ear-tags.[63][36][43][45][48][51] Further, the minimal analgesia provided by Telazol® only lasts a few hours whereas the pain and discomfort caused by tooth extraction can last several days. The administration of a potent, long-acting local anesthetic drug (e.g., bupivicaine) is vital to minimizing the pain associated with tooth extractions.[30][58][71] However, no local analgesia was provided for the extraction(s).[1i][4m] Without adequate analgesia and a protracted extraction procedure, Bear #646 undoubtedly experienced significant (and unnecessary) stress and trauma.

(v) The trapping crew physically examined Bear #646 to evaluate its health status.

Supporting Information: The physical examination included an evaluation of the eyes, ears, nose, mouth (including teeth), penis (including *os penis*), testicles, body condition, and snared forelimb.[58w][66][67] Bear #646 was noted to have a large open laceration (2" × 3" at widest) behind the left shoulder, as well as numerous old and new scars.[66] The typed version of the tagging form[67] adds that there were scars and fight wounds on the head and neck. There was also some wear and breaking of teeth which was assessed as being "old" damage. In addition, Bear #646 was noted to have a swollen right foot in the area where the snare cable had tightened down just above the foot pad.[66][20]

Opinion 12: *Bear #646 was injured as a consequence of being captured and restrained by leg-hold snare.*

The Investigation Team Report attributed all skin wounds, including the shoulder laceration, to fighting with other grizzly bears prior to capture.[58e] While this is a plausible explanation, it is equally likely that some of these injuries were sustained by Bear #646 while attempting to free itself from the snare. Similarly, the wear and breaking of teeth, which was assessed as being "old" damage[66], also may have occurred in part while attempting to escape the snare. Bear #646 had been held by a leg-hold snare for hours and had been trying to escape as confirmed by the damage he had inflicted to the snare tree.[53][1m] In regard to the swollen right foot, swelling can occur as a consequence of the tourniquet effect of a tightened snare interfering with return blood flow from the area distal to the snare. However, this type of swelling would subside quite quickly once the snare was removed. Sustained swelling as noted for Bear #646 is an indication of underlying tissue injury which can include bone fracture(s).

Despite noting several injuries on the IGBST Bear Tagging Form, Chad Dickinson expressed the view that capture by leg-hold snare was not traumatic for Bear #646 or, more generally, for any bear.[1f] To the contrary, Charles Schwartz acknowledged that capture by leg-hold snare is a traumatic event for a bear.[2a] Seth Thompson correctly agreed unconditionally that bears, when trapped, handled, and released, are subjected to severe stress and trauma.[4s]

(vi) *The trapping crew measured and recorded the body dimensions, body weight, and body fat of Bear #646.*

Supporting information: The trapping crew measured and recorded body dimensions, body weight, and body fat. The body dimension measurements included contour length (181 cm), chest girth (122 cm), neck circumference (90 cm), head length (38 cm), head width (21.5 cm), and several measurements of the front and hind foot pads.[66] The body weight was determined to be 425 lbs by weigh scale which was close to the estimate of 400 lbs used to calculate the Telazol® dose.[66] The percent body fat was estimated at 3.3% using the technique of bioelectrical impedance[66], but this value appeared to be too low based on the observation that Bear #646 was "not thin or skinny".[67]

Opinion 13: *This was an appropriate standard operating procedure to conduct under the circumstances.*

(vii) *The trapping crew determined Bear #646's sex.*

Supporting information: The male sex of Bear #646 was confirmed by examination of its external genitals.[66]

Opinion 14: *This was an appropriate standard operating procedure to conduct under the circumstances.*

(viii) *The trapping crew estimated Bear #646's age in years.*

Supporting information: The trapping crew estimated Bear #646 to be 10 years old.[66]

Opinion 15: *This was an appropriate standard operating procedure to conduct under the circumstances.*

(ix) The trapping crew collected biological samples from Bear #646.

Supporting Information: The trapping crew collected biological samples from Bear #646, which included a tooth (as described above), blood, and hair.[66] Tissue was also collected, but I cannot determine what type of tissue, e.g., biopsy of skin, fat, and/or muscle.

Opinion 16: *Notwithstanding Opinion 11, these were appropriate standard operating procedures to conduct under the circumstances.*

(x) The trapping crew carried out several procedures on Bear #646 to ensure its long-term identification.

Supporting Information: The trapping crew ensured the capability to identify Bear #646 in future by (i) attachment of ear tags (942 red in both ears), (ii) application of a numerical tattoo (942) on the upper lip on both sides, (iii) and injection of a passive integrated transponder (PIT) tag (46287E574F) into the right tricep.[66][67]

Opinion 17: *Although the procedures carried out to ensure the long-term identification of Bear #646 are standard operating procedures, the analgesic effect of Telazol® was more likely than not inadequate to mask the pain associated with the application of lip tattoos and ear-tags.*

The analgesic effect of Telazol® is generally poor and inadequate for some of the common procedures carried out on captured bears, e.g., tooth extraction, lip tattoo, application of ear-tags.[63][36][43][45][48][51]

(xi) The trapping crew fitted Bear #646 with a very high frequency (VHF) radio-collar.

Supporting Information: Fitting and deployment of a very high frequency (VHF) radio-collar.[66][67]

Opinion 18: *This was an appropriate standard operating procedure to conduct under the circumstances.*

(xii) The trapping crew administered an antibiotic drug to Bear #646.

Supporting information: Administration of 3,600 mg of oxytetracycline (Tetradure™ 300 Injection) by injection of 12 ml split as 2 × 6 ml injections into each hindlimb. In addition, nitrofurazone (Furacin Topical) was applied to the skin wounds.[66][67]

Opinion 19: *This was an appropriate standard operating procedure to conduct under the circumstances.*

h) Regarding the initial signs of recovery shown by Bear #646.

Supporting information: The initial signs of recovery shown by Bear #646 were licking and blinking at 1048 hr, which occurred 93 minutes following the onset of immobilization at 0915 hr.[66][67]

Opinion 20: *Signs of recovery and the timing of its onset in Bear #646 were normal.*

Linking and blinking are often the first signs of recovery observed in bears anesthetized with Telazol® alone[35][48][50], or following the administration of an antagonist drug in bears anesthetized with the combination of an alpha-2 adrenergic drug and Telazol®.[26][32]

This timing of the onset of recovery (93 minutes) was longer than average for 42 grizzly bear captures from 2007-2010 that involved Chad Dickinson as a trapper (average = 60 minutes, median = 58 minutes)[54], but fell within the minimum-maximum range (20-140 minutes) for these captures. Similar initial recovery signs and intervals are also reported in the peer-reviewed scientific literature.[9][10]

i) Regarding the stage of Bear #646's recovery at the time the trapping crew departed from the trap site.

Supporting information: The trapping crew departed from the capture site at 1230 hr, approximately 195 minutes following the onset of immobilization.[66] At this time, Bear #646 had progressed in his recovery to the point where he was able to lift his head and move it side-to-side.[66] In his statement for the Investigation Team Report, Seth Thompson noted that just to departing from the capture site, he and Chad approached Bear #646 on horseback to stimulate a quicker recovery. At this point, Bear #646 appeared to be able to focus on the trapping crew and was beginning to push up on his

front legs.[58p][4p] However, Bear #646 was unable to stand or walk at the time the capture crew departed.[1k][4q]

Charles Schwartz stated in his deposition that, based on the information provided on the IGBST Bear Tagging Form for Bear #646, Bear #646 was in a recovery state and near ambulatory[2h], and later added that "But in the recovery process with Telazol®, in many situations, it's a matter of minutes between the time they have their head up and the time they have use of their forelimbs and then their hind-limbs, it can take longer but it can occur that quickly."[2i]

Opinion 21: *Although Bear #646 was progressing through the normal signs of recovery, given the multiple doses administered, he was likely to remain recumbent for a prolonged period (≥1.5 hour) following the departure of the trapping crew.*

I reviewed the capture records (tagging forms) for 46 grizzly bear captures from 2007-2010 that involved Chad Dickinson as a trapper and found that the time interval from when a bear was pushing with its front legs to when it was able to stand and ambulate (walk or run) was only recorded for seven captures.[54] With this small sample, the average interval was 107 minutes, the median interval was 69 minutes, and the minimum-maximum range was 38-240 minutes. Further, the statements made by Charles Schwartz run contrary what is reported in the peer-reviewed scientific literature regarding recovery times for grizzly bears immobilized with Telazol®. The available information I reviewed is consistent with prolonged recoveries occurring over several hours, especially when Telazol® is administered as multiple doses over time.[9];[10]

I also reviewed the completed tagging forms from approximately 400 captures by the IGBST from 2007-2011 where Telazol® was used as the sole anesthetic drug to determine the time statistics for the following intervals: (1) tongue movement to complete recovery, (2) head-up to complete recovery, and (3) push up /out with front feet to complete recovery.[55] I found 68 forms which documented both the recovery time and recovery signs (either standing or ambulating), and from these I calculated time intervals as follows:

Interval	Number of Telazol® administrations	Number of times interval reported	Average (minutes)	Median (minutes)	Minimum to maximum range (minutes)
(1)	single	24	151	106	55 - 390
(2)	single	34	130	100	27 - 381
(3)	single	5	61	68	38 - 89
(1)	multiple	11	200	193	75 - 343
(2)	multiple	27	196	154	85 - 410
(3)	multiple	7	127	107	104 - 240

These data support what is reported in the scientific literature, and indicate it was likely that Bear #646 was still recumbent when Mr. Evert walked into the capture location. Mr. Evert departed for his hike at 1230-1245 hrs[58s][58t] and his time of death was estimated to be at 1400 hrs by the coroner.[58t] This time-frame falls well within the average and median times (127 and 107 minutes) for a bear recovering from multiple injections of Telazol® to progress from pushing up or out with its front feet to standing and/or ambulating.

Opinion 22: *Although the trapping crew departed from the capture site prior to the complete recovery of Bear #646, and notwithstanding Opinion 5, leaving Site #3 to check whether a capture occurred at Site #2 was a justifiable action to take under the circumstances. However, as discussed below in Opinion 23, removing all warning and/or closure signs prior to leaving Site #3 was not a justifiable action.*

The IGBST states in the Northern Rocky Mountain Science Center Policy for Utilization of Animals in Research that "Researchers remain at capture sites and monitor the recovery of all grizzly bears until they are once again ambulatory."[58i] Although this procedure was not followed with Bear #646, the trapping crew had reason to anticipate that another bear may have been captured at Site #2.[8][18] So, in this situation where one bear is recovering and another may be restrained elsewhere, either decision, stay or go, although less than ideal, can be justified on the basis of addressing concerns for the safety of one or the other bear.[2c] However, the trapping crew may not have had to make this decision had they administered a reversible drug combination to immobilize Bear #646 followed by administration of an antagonist drug at the conclusion of handling.

j) Regarding the removal of closure signs while Bear #646 was recovering, not ambulatory, and present at the capture site

Supporting information: Prior to departing capture site #3, and prior to making a final assessment of Bear #646's recovery progress, Chad Dickinson deliberately removed the site closure signs and both trappers removed all snare equipment at the site.[58n][58o]

Opinion 23: *The trapping crew willfully removed all closure and warning signs from the trap site #3 prior to Bear #646 leaving the area. The trapping crew failed to warn members of the public about, or guard against the known and obvious risk of a baited, captured and recovery grizzly bear present at Site #3 when they left the site.*

Both trappers knew that Bear #646 posed a danger to anyone who encountered it while recovering, but removed the closure signs because they had not seen evidence of

human activity during the previous weeks, they had previously planned on finishing their capture operations that day and leaving the area, and the weather was inclement.[58n][58o][Li][4t]

The Investigation Team Report included an appendix[58k] titled "existing protocols for sign use" that places considerable emphasis on the responsibilities of government researchers and managers to ensure the public is adequately warned if dangerous animals are in the area or if there is potential for a confrontation.[58l]

The Investigation Team recommended on 7/16/2010 that standardized warning signs "be posted at the initiation of capture operations and that the signs remain up for at least 3 days after capture operations have ceased." These signs should include a posted date that the area is closed and a posted date ending the area closure.[60a] In response, the IGBST revised their signing protocol such that: (i) signs at front country locations (i.e., accessible each day from a road) will remain at place for at least 3 days after all trapping/baiting activities have ceased, and (ii) signs at back country locations (i.e., not accessible each day from a road) will remain in place until the end of trapping operations if not bears have been captured and handled up to and including the last day of trapping operations, or signs will remain in place for at least 24 hours after any bear has been captured and until the trapping crew determines that the bear has left the vicinity of the trap site via telemetry.[62] I would suggest that the question of how long a recovering bear remains in the vicinity of a trap site would best be addressed by a retrospective analysis of telemetry data (from the IGBST and/or other long-term grizzly bear studies) to determine where and how far bears move in the hours and days following capture and handling (This idea was also discussed at Mark Haroldson's deposition on May 24, 2012[3a]). This would enable the development of signing protocols based on scientific data.

4) Conclusions

Regarding the question, "Did the recent capture and handling of Bear #646 make it more likely to attack someone than if it had not been recently handled and captured?"

The answer to this question is an unequivocal "yes" based on the following reasoning.

a) *Prior to June 17, 2010, Bear #646 had no known history of interactions or conflicts with humans.* Following its death, Bear #646 was determined to be 13 years old by laboratory analysis of its extracted tooth.[7] As a male bear in the prime of adulthood, Bear #646 likely had a long-established home range that encompassed part of the Kitty Creek drainage, including the area where he was baited and captured. Given the close proximity of cabins, camps, roads, and trails, Bear #646 would likely have had ample opportunity to interact with people and their property prior to June 17, 2010, but there is no record of this having occurred. Further, given that Erwin Evert was an avid outdoor person who had hiked the Kitty Creek drainage many times over forty years[58q][5a], it is reasonable to assume that Bear #646 and Mr. Evert shared the same landscape over a long period without incident.

b) *Once snared, Bear #646 presented a great risk as shown by his attempts to attack humans on June 17, 2010, several hours prior to fatally attacking Mr. Evert.* Chad Dickinson and Seth Thompson both described Bear #646 as charging at them a few times, as well as trying to escape, when they approached to dart him.[19][1g][1m][4k] The likely explanation for this sudden aggressive behavior in an adult bear with no prior history of conflict with humans is severe stress and trauma. Bear #646 had been held by a leg-hold snare for hours and had been trying to escape as confirmed by the damage he had done to the snare tree[53][1m], his swollen right fore-paw[58w], and possibly some of his fresh lacerations and abrasions.[58w] This was a "fight or flight" response by a restrained, injured, wild animal with no avenue of escape from humans that were approaching closely. Then 4 or 5 hours later, Bear #646 was recovering from anesthesia to the point of being able to ambulate, and was approached again by a human, this time Mr. Evert. Bear #646 elicited the same stress response, but this time there was no snare to restrain his charge.

Was there any reasonable action that could have been taken to prevent the deaths of Mr. Erwin Evert and Bear #646?

The answer to this question is also an unequivocal "yes" based on the following reasoning.

a) *The IGBST willfully failed in their obligation to protect, guard and warn people from the dangers it created.* The Investigation Team Report included an appendix[58k] on

existing protocols for sign use that placed considerable emphasis on the responsibilities of government researchers and managers to ensure the public is adequately warned if dangerous animals are in the area or if there is potential for a confrontation.[58l] Charles Schwartz, as the IGBST leader, in 2010 acknowledged in his deposition that the safety of the public must be considered with grizzly bear capture and handling operations.[2b] And yet, the IGBST failed to ensure the local public was informed of safety concerns in advance of, and during, grizzly bear capture and handling operations. Consequently, the trapping crew made no effort to notify local residents/cabin owners of their research activities. Further, the IGBST failed to keep closure signs in place at a trap site where a bear has been captured until it is determined that the bear has left the area. With these inadequacies in communications, I don't believe Mr. Evert could possibly be aware that he was walking into a bear capture site where a recently captured and handled bear was still present. It is clear that public safety was compromised by a willful lack of communication.

b) *The IGBST failed their obligation to insure the welfare of study animals.* The opening paragraph of the Northern Rocky Mountain Science Center Policy for Utilization of Animals in Research states that, "...the welfare of individual animals and their populations should be of highest priority and must be insured by the researcher. Minimization of stress and pain to the animals under investigation is not only morally correct, but essential for ensuring quality of data collected and reduction of negative public perceptions."[58f] And yet, the IGBST used a method of capture known to have a high probability of causing physical and physiological injury and knowingly used an anesthetic drug protocol that was less-than-adequate for their specific handling requirements when better drug protocols were available. Further, the trapping crew neither adequately monitored the vital signs of Bear #646 nor provided sufficient analgesia for a protracted tooth extraction, and possibly for the application of lip tattoos and ear tags. Had the trapping crew been using a culvert trap, or remote drug delivery from helicopter, as a method of capture and using a reversible anesthetic drug protocol (medetomidine-Telazol® or xylazine-Telazol®, and appropriate antagonist drug) for immobilization, Bear #646 would have been exposed to less stress, less injury, and would have been less likely to have attacked Mr. Evert and died as a consequence.

Overall, I can summarize the findings from my analysis of this tragic event as (i) complacency kills, (ii) reject responsibility, and (iii) blame the victim.

(i) *Complacency kills* – In 2010, at the time of this event, the Interagency Grizzly Bear Study Team (IGBST) was probably unsurpassed in their knowledge of, and experience with, grizzly bears, being the longest standing grizzly bear research project in North America, if not the world. The IGBST had a visible presence at many regional, national, and

international conferences and workshops concerning bears through their oral and poster presentations. The IGBST hosted a "Bear Handler's Workshop" on a regular basis which brought together bear researchers and managers from far and wide to share knowledge and experiences on how to improve our interactions with bears, including improving capture methods and reducing capture mortality. Lastly, the IGBST had an operations manual[58k], an animal care protocol[58l], and a U.S. Fish and Wildlife Service sub-permit for handling research grizzly bears that collectively put highest priority on protecting the public while also ensuring the welfare of individual study animals. Despite all this, the IGBST did not apply this knowledge, experience, and responsibility in their actions. Instead, the field project failed in many respects (e.g., use of signs, capture method, choice of anesthetic drug, provision of analgesia), and this ultimately caused the deaths of Mr. Evert and Bear #646.

(ii) *Reject responsibility* – Aside from Chad's statement in his journal on June 17, 2010[20a], the absence of any acknowledged failures suggests the IGBST has not accepted responsibility for this event.

(iii) *Blame the victim* – Beyond not accepting responsibility, the IGBST appears to have accepted a strategy of blaming the victim. I was surprised during my initial reading of The Investigation Team Report to note several innuendos taken from third-person accounts (by Tim Eicher and by Terry Root) that collectively portrayed Mr. Evert as a reckless individual whose fervent need to determine what the IGBST was doing cost him his life. Examples include:

"Mr. Evert reportedly did not carry bear spray or a weapon when he hiked in bear country..." (USFWS FOIA 000004)
"However, Chuck said that Evert had decided to go investigate the issue and had even told his daughter...that he was going up that day to check it out. Chuck said that Evert seemed to be obsessed with finding out what the signing was all about." (USFWA FOIA 000097)
"Bear #646 was killed by management agencies on the morning of 19 June 2010 in order to err on the side of public safety because there were no witnesses to exactly what happened when Mr. Evert was killed by the bear." (USFWS FOIA 000013)

With my analysis of the information and evidence provided, I am left with the opinion that the answers lie with the failures of the IGBST rather than with Mr. Evert's character.

Signed: _____
Marc Cattet, DVM, PhD

Date: 19 July 2012

5) Documents Available for Review and Report Preparation

a) Documents Provided to Me by The Spence Law Firm and Cited in the Report

1. Chad Dickinson Deposition Transcript (2012.05.24)
    a) Pages 19-22
    b) Pages 24-27
    c) Pages 32-33
    d) Pages 32-37
    e) Page 43
    f) Pages 54-55
    g) Page 55
    h) Pages 57-58
    i) Page 59
    j) Pages 59-62
    k) Page 60
    l) Pages 62-63
    m) Page 63
    n) Page 66
    o) Pages 75-76
    p) Pages 97-98
    q) Pages 102-104
    r) Pages 16-19
2. Charles Schwartz Deposition Transcript (2012.05.24)
    a) Pages 13-14
    b) Pages 14-15
    c) Page 34
    d) Pages 48-50
    e) Page 51
    f) Pages 53-54
    g) Page 57
    h) Page 92
    i) Page 93
    j) Page 94
3. Mark Haroldson Deposition (2012.05.24)
    a) Pages 54-56
4. Seth Thompson Deposition Transcript (2012.05.24)
    a) Page 34
    b) Pages 34-35
    c) Pages 38-41
    d) Pages 41-42
    e) Page 42
    f) Pages 47-48

g) Pages 54-57
h) Page 55
i) Pages 80-81
j) Page 85
k) Pages 85-86
l) Pages 88-89
m) Page 89
n) Page 90
o) Page 91
p) Pages 92-93
q) Pages 95-96
r) Pages 96-97
s) Page 102
t) Pages 102-117

5. Yolanda Evert Transcript (2012.06.14)
    a) Pages 10-12
    b) Page 160
6. Bear Handling Workshop (March 2010)
    a) USFWS FOIA 001727-001728
    b) USFWS FOIA 001729
7. EVERT_0004751
8. EVERT_0004903 (Exhibit 13)
9. EVERT_0005119-0005128
10. EVERT_0005133-0005136
11. EVERT_0005137-0005142
12. EVERT_0005138-0005139
13. EVERT_0005149-0005166
14. EVERT_0005167-0005172
15. EVERT_0005689
16. EVERT_0005695
17. EVERT_0005698
18. EVERT_0006021
19. EVERT_0006022 (Exhibit 29)
20. EVERT_0006023
    a) EVERT_0006024
21. EVERT_0006105
22. EVERT_0006105-0006107
23. EVERT_0006110
24. EVERT_0006112
25. EVERT_0006121
26. EVERT_0006122
27. EVERT_0006147-0006150

28. EVERT_0006150
29. EVERT_0006151
30. EVERT_0006154
31. EVERT_0006178
32. EVERT_0006179
33. EVERT_0006179-0006182
34. EVERT_0006218
35. EVERT_0006232
36. EVERT_0006235
37. EVERT_0006239-0006240
38. EVERT_0006268
39. EVERT_0006297
40. EVERT_0006297-0006302
41. EVERT_0006298
42. EVERT_0006303
43. EVERT_0006307
44. EVERT_0006309
45. EVERT_0006316
46. EVERT_0006323
47. EVERT_0006323-0006324
48. EVERT_0006324
49. EVERT_0006327-0006328
50. EVERT_0006328
51. EVERT_0006329
52. EVERT_0006355
53. EVERT_0006418
    a) EVERT_0007404
54. EVERT_003897-004505
55. EVERT_003897-004699
56. Scanned photos of the incident scene taken by the Park County Sheriff's Office on 06/17/2010
57. Scanned photos of the incident site and surrounding area – USFWS FOIA 000110-000127
58. The Investigation Team Report
    a) USFWS FOIA 000001-000105
    b) USFWS FOIA 000003
    c) USFWS FOIA 000005
    d) USFWS FOIA 000006
    e) USFWS FOIA 000010
    f) USFWS FOIA 000015 (Appendix 1)
    g) USFWS FOIA 000018-000021 (Appendix 1)
    h) USFWS FOIA 000021 (Appendix 1)

i) USFWS FOIA 000022 (Appendix 1)
j) USFWS FOIA 000027 (Appendix 1)
k) USFWS FOIA 000051-000056 (Appendix 3)
l) USFWS FOIA 000055-000056 (Appendix 3)
m) USFWS FOIA 000061 (Appendix 6)
n) USFWS FOIA 000063 (Appendix 7)
o) USFWS FOIA 000067 (Appendix 8)
p) USFWS FOIA 000068 (Appendix 8)
q) USFWS FOIA 000093-000094 (Appendix 13)
r) USFWS FOIA 000095 (Appendix 13)
s) USFWS FOIA 000097 (Appendix 14)
t) USFWS FOIA 000099 (Appendix 15)
u) USFWS FOIA 000100 (Appendix 16)
v) USFWS FOIA 000104 (Appendix 20)
w) USFWS FOIA 000105 (Appendix 21)

59. The Plaintiff's Complaint [Case 2:11-cv-00339-NDF Document 1]
60. The Recommendations of the Investigation Team
    a) USFWS FOIA 000106-000107
    b) USFWS FOIA 000106-000109
61. USFWS FOIA 000737
62. USFWS FOIA 000922
63. USFWS FOIA 001720
64. USFWS FOIA 001722
65. USFWS FOIA 002713
66. USFWS FOIA 003283
67. USFWS FOIA 003287

b) Documents from Other Sources Cited in the Report

68. Bourne, D.C., J. M. Cracknell, and H. J. Bacon. 2010. Veterinary issues related to bears (*Ursidae*). International Zoo Yearbook 44: 16–32.
69. Canadian Council on Animal Care (CCAC). 2003. CCAC guidelines on: the care and use of wildlife. Canadian Council on Animal Care, Ottawa, Canada. (Pages 62-63)
70. Cattet , M. 2012. Saskatchewan Ministry of Environment Field Chemical Immobilization Record (2012-2013 – Regina & Saskatoon Only)
71. Cattet M, Obbard ME. 2010. Use of hyaluronidase to improve chemical immobilization of free-ranging polar bears (Ursus maritimus). Journal of Wildlife Diseases 46(1): 246-250.
72. Cattet, M. 2012. Preparation of Select Drug Combinations to Use for Wildlife Chemical Immobilization.

73. Cattet, M., Graham, K., and Stenhouse, G. 2012. Appendix A: Foothills Research Institute Grizzly Bear Program Capture Data Form (2012).
74. Cattet, MRL, Bourque, A, Elkin, BT, Powley, KD, Dahlstrom, DB, and NA Caulkett. 2006. Evaluation of the potential for injury with remote drug delivery systems. Wildlife Society Bulletin 34(3):741-749.
75. E-mail correspondence from Mark L. Aronowitz to Marc Cattet on 6/29/12 regarding a phone discussion between Mark Aronowitz and Mark Bruscino earlier that day.
76. Kreeger, T. J., and J. M. Arnemo. 2007. Handbook of wildlife chemical immobilization, third edition. Sunquest Publishing, Inc., Vancouver, British Columbia, Canada. 417 pages.
    a) Pages 69-81
    b) Page 165
77. Lin, H. C., J. C. Thurmon, G. J. Benson, and W. J. Tranquilli. 1993. Telazol – a review of its pharmacology and use in veterinary medicine. Journal of Veterinary Pharmacology and Therapeutics 16: 383-418.
78. Taylor, W.P., Jr., H. V. Reynolds, III, and W.B. Ballard. 1989. Immobilization of grizzly bears with tiletamine hydrochloride and zolazepam hydrochloride. The Journal of Wildlife Management 53: 978-981.
79. West, G., D. Heard, and N. Caulkett (editors). 2007. Zoo animal and wildlife immobilization and anesthesia. Blackwell Publishing Professional, Ames, Iowa, USA. 718 pages.
    a) Chapter 35
    b) Pages 66-67
    c) Page 410
80. White, L.A., and Gehrt, S.D. 2009. Coyote attacks on humans in the United States and Canada. Human Dimensions of Wildlife 14:419–432.
81. Wobeser, G. 1996. Forensic (medico-legal) necropsy of wildlife. Journal of Wildlife Diseases 32(2): 240-249.

c) Complete List of Documents Provided to Me by The Spence Law Firm***

*** *Documents are arranged alphabetically*

Chad Dickinson Deposition Transcript (2012.05.24)
Charles Schwartz Deposition Transcript (2012.05.24)
Chris Servheen Depo Transcripts (2012.05.17)
Defendant's First Set of Interrogatories (2012.03.22)
Defendant's First Set of RFP's (2012.03.22)
Defendant's First Supplemental Self-Executing Routine Discovery Statement (2012.04.23)
Defendant's Initial Self Executing Routine Discovery Statement (2012.01.21)

Defendant's Second Supplemental Self-Executing Routine Discovery Statement (2012.04.30)
Defendant's Third Supplemental SERD (2012.05.22)
Deposition Exhibits 1-45 (2012.05.30 and 2012.06.14)
Diary 000001-000002
Diary 000003-000012
Evert_000001-000050 USFS Special Use Permit Documents
Evert_0004942-0004952 – Signs
Evert_0005034-0005082 Training Records
Evert_0005083-0005097 USFWS Permits
Evert_0005098-0005103 WGFD Permits
Evert_0005104-0005172 - Research & Literature on effects of capture on grizzly bears
Evert_0005173-0005199 - Field Techniques Used In the Study of Grizzly Bears (Blanchard Protocol)
Evert_0005204-0005321 Chuck Schwartz Personnel File
Evert_0005322-0005483 Chad Dickinson Personnel File
Evert_0005484-0005513 - Seth Thompson Personnel File
Evert_0005514-0005682 Chris Servheen Personnel File
Evert_0005609-0005700 Protocols in effect at time of incident
Evert_0005701-0005708 New Protocols in effect since June 2010
Evert_0005709-0005734 Color Photographs Snare Site etc
Evert_0005735-0005832 Bear Spray Information
Evert_0005833-0005928 Firearm Information
Evert_0005929-0005938 Information Provided to public re trapping since June 17, 2010
Evert_0005939-0005968 Bear Mortality Reports
Evert_0005969-0006003 Drafts & Individual Information provided for IGBST Report
Evert_0006004-0006047 Documents re-IGBST trapping activities in May-June 2010
Evert_0006048-0006104 Reports, Minutes, Review Results 2008-2011
Evert_0006105-0006356 Telazol Research Literature & Documentation
Evert_0006357-0006445 Statements, Reports, Affidavits Etc
Evert_0007401-0007406 Seth Thompson Calendars & Notes
Evert_0007407-0007408 Qwest Records
Evert_003894-003896 - Cabin List
Evert_003897-004003 Capture Forms – 2007
Evert_004004-004128 Capture Forms – 2008
Evert_004129-004306 Capture Forms – 2009
Evert_004307-004505 Capture Forms – 2010
Evert_004506-004699 Capture Forms – 2011
Evert_004700-004765 Life Histories 1986-Current
Evert_004766-004924 Trap Logs 1996-2011
Evert_004925-004930 Chad Dickinson Training Records
Evert_004931-004934 Charles Schwartz Training Records
Evert_004935-004937 Chris Servheen Training Records
Evert_004938-004941 Seth Thompson Training Records
Evert_004953-005033 Erwin Evert Botany Permits & Annual Reports
Evert_005683-005688 #646 Radio Collar Info
Evert_UNBATESED Yellowsone Grizzly Bear Investigations 2006
Evert_UNBATESED Yellowsone Grizzly Bear Investigations 2008

Judy O'Dwyer Deposition Transcript (2012.05.24)
Mark Haroldson Deposition (2012.05.24)
Memorandum & Order Denying Defendant's Motion to Dismiss (018)
NPS FOIA Production (000001-000016 NPS)
Plaintiff's First Supplemental Responses to Defendant's First Set of Requests for Production SIGNED with attachments (2012.05.02)
Plaintiff's Interrogatories to Defendant SIGNED (2012.03.15)
Plaintiff's Responses to Defendant's First Set of Interrogatories (2012.04.20)
Plaintiff's Responses to Defendant's First Set of Requests for Production (2012.04.20)
Plaintiff's Second Supplementary Rules 26 Initial Disclosures SIGNED (2012.04.26)
Protective Order Regarding Sensitive Research Data (025)
Protective Order Regarding the Production of Certain Personnel Records (024)
Request for Admission SIGNED (2012.03.15)
Request for Production SIGNED (2012.03.15)
Seth Thompson Deposition Transcript (2012.05.24)
Shoshone NF FOIA (000001-000056)
SS Email 000001-000004 (Scott Steward & Mara) (2012.04.20)
United States' First Supplemental Response to Plaintiff's First RFPS (2012.05.15)
United States' Privilege Log (2012.04.23)
United States' Responses to Plaintiffs First Interrogatories to Defendant (2012.04.23)
United States' Responses to Plaintiffs First Request for Admission to Defendant (2012.04.19)
United States' Responses to Plaintiff's First Request for Production of Documents to Defendant (2012.04.30)
United States' Supplemental Privilege Log (2012.04.30)
USDAFS FOIA (000001-000283)
USFS FOIA (000001-000008)
USFWS FOIA (000001-000432)
USFWS FOIA (000433-002623)
USFWS FOIA (002624-002683)
USFWS FOIA (002670-002921)
USFWS FOIA (002922-003175)
USFWS FOIA (003176-003365)
WY G&F Production (000001-000253)
Yolanda Evert Transcript (2012.06.14)

6) Reservation of Right to Amend Report Based on Review of Further Discovery

I specifically reserve the right to amend or supplement this report based on a review of additional information or evidence made available to me. This includes recent depositions by Dennis Alquist, Mara Domingue, Chuck Neal, and Andy Pils that I understand will be made available to me following their transcription.

7) Abridged Curriculum Vitae for Marc Cattet

1. PERSONAL:

Birth date:	11 May 1959
Social Insurance No:	465 099 075
Citizenship:	Canadian, Métis, French
Home address:	415 Mount Allison Crescent, Saskatoon, SK S7H 4A6
Contact:	Home phone – 306-374-7102, Work phone – 306-966-2162, Cell – 306-280-3782, e-mail – marc.cattet@usask.ca, cattet@sasktel.net

2. ACADEMIC CREDENTIALS:

University of Guelph, Guelph, ON	BSc (Wildlife Biology)	1982
University of Alberta, Edmonton, AB	MSc (Zoology)	1988
University of Guelph, Guelph, ON	DVM	1993
University of Saskatchewan, Saskatoon, SK	PhD (Veterinary Pathology)	2000

3. OTHER CREDENTIALS:

Registered veterinarian	General practice, (SVMA) Saskatchewan	1994 – present
Registered veterinarian	General practice, (AVMA) Alberta	1999 – present
Registered veterinarian	General practice, (CVO) Ontario	2005 – present
Licensed veterinarian	Canadian Veterinary Medical Association	1994 – present

4. APPOINTMENT(S):

Professional research associate
Canadian Cooperative Wildlife Health Centre
Western College of Veterinary Medicine, University of Saskatchewan — 2000 – present

Adjunct professor
Department of Veterinary Pathology
Western College of Veterinary Medicine
University of Saskatchewan — 2004 – present

Adjunct professor
Dept. of Biology
University of Waterloo — 2008 – present

5. ASSOCIATE MEMBERSHIPS:

IUCN Veterinary Specialist Group, Canadian Veterinary Reserve, Executive Committee of the Canadian Cooperative Wildlife Health Centre, Wildlife Disease Association, International Association for Bear Research & Management

6. INSTRUCTIONAL RECORD:

Instructed courses in the chemical immobilization of wildlife to:

- Saskatchewan Environmental Resource Management, Prince Albert, SK 1999
- Alberta Environmental Protection Natural Resources Service, Hinton, AB 2000
- Alberta Environmental Protection Natural Resources Service, Hinton, AB 2000
- Alberta Environmental Protection Natural Resources Service, Hinton, AB 2000
- Saskatchewan Environmental Resource Management, Prince Albert, SK 2000
- Alberta Environmental Protection Natural Resources Service, Hinton, AB 2000
- Nunavut Department of Sustainable Development, Iqaluit, NU 2001
- Yukon Wildlife Branch at Whitehorse, YK 2001
- Gov't of the NWT Environment and Natural Resources, Yellowknife, NT 2001
- Alberta Sustainable Resource Development, Hinton, AB 2001
- Parks Canada, Pukaskwa National Park, Marathon, ON 2001
- Sponsors of the Canadian Cooperative Wildlife Health Centre, Saskatoon, SK 2002
- Sponsors of the Canadian Cooperative Wildlife Health Centre, Sackville, NB 2002
- Sponsors of the Canadian Cooperative Wildlife Health Centre, Churchill, MB 2002
- Ontario Ministry of Natural Resources, Azilda, ON 2002
- Sponsors of the Canadian Cooperative Wildlife Health Centre, Saskatoon, SK 2002
- Ontario Ministry of Natural Resources, Thunder Bay, ON 2002
- Sponsors of the Canadian Cooperative Wildlife Health Centre, Saskatoon, SK 2003
- Gov't of the NWT Environment and Natural Resources at Yellowknife, NT 2005
- Alberta Community Development – Parks and Protected Areas, Canmore, AB 2006
- Alberta Community Development – Parks and Protected Areas, Canmore, AB 2006
- Saskatchewan Environment, C.F.B. Dundurn, SK 2007-9
- Saskatchewan Environment, Saskatoon, SK 2010-11
- Alberta Parks and Protected Areas, Canmore, AB 2007-11

7. POSTGRADUATE STUDENTS SUPERVISED OR ON THEIR COMMITTEE

Name	Degree	Thesis Subject Area	Year
Ryan Brook	PhD	Ecology and human-wildlife interactions	2001-2007
Aleksija Neimanis	MVetSc	Wildlife pathology	2001-2005
Jessica Paterson	MVetSc	Wildlife anesthesia	2003-2006
Ruth Carlson	PhD	Stress physiology and proteomics	2004-2011
Alysha Pape	MSc	Geography and remote sensing	2005-2007
Amé Nussbaum	MSc	Geography and remote sensing	2005-2007
Jason Hamilton	MSc	Stress physiology	2005-2007
Jorgelina Muscatello	PhD	Environmental toxicology	2005-2008
Johan Lindsjö	MSc	Wildlife health	2006-2009
Scott Nielsen	PDF	Wildlife health	2008
Bryan MacBeth	MSc	Stress physiology and wildlife health	2007-present
Brian Chow	PhD	Stress physiology	2008-present
June Yang	MSc	Wildlife health	2008-present
Kai Wang	PhD	Geography and remote sensing	2008-2011

Mathieu Bourbonnais	MSc	Geography and wildlife health	2011-present

8. THESES SUPERVISED:

Johan Lindsjo. 2009. Development and application of a health function score system for grizzly bears (Ursus arctos) in western Alberta. MSc thesis. Department of Veterinary Pathology, University of Saskatchewan.

9. BOOKS, CHAPTERS IN BOOKS, EXPOSITORY AND REVIEW ARTICLES:

Proulx, G., M. R. L. Cattet, and R. A. Powell. 2012. Humane and efficient capture and handling methods for carnivores. Pages 70-129 in L. Boitani and R. A. Powell, editors. Carnivore Ecology and Conservation: A Handbook of Techniques, Oxford University Press, London, UK.

10. PAPERS IN REFEREED JOURNALS OVER THE LAST 10 YEARS:

PUBLISHED:

Caulkett NA, Cattet MRL. 2002. Anesthesia of bears. *In:* D. Heard (Ed.). Zoological Restraint and Anesthesia. International Veterinary Information Service (www.ivis.org), Ithaca, New York.

Howell-Skalla LA, Cattet MRL, Ramsay MA, Bahr JM. 2002. Seasonal changes in testicular size and serum LH, prolactin and testosterone concentrations in male polar bears (*Ursus maritimus*). Reproduction 123: 729-733.

Cattet MRL, Caulkett NA, Obbard ME, Stenhouse GB. 2002. A body condition index for ursids. Canadian Journal of Zoology 80: 1156-1161.

Cattet MRL, Caulkett NA, Stenhouse GB. 2003. Anesthesia of grizzly bears using xylazine-zolazepam-tiletamine. Ursus 14(1): 88-93.

Cattet MRL, Christison K, Caulkett NA, Stenhouse GB. 2003. Physiologic responses of grizzly bears to different methods of capture. Journal of Wildlife Diseases 39(3): 649-654.

Cattet MRL, Caulkett NA, Lunn NJ. 2003. Anesthesia of polar bears using xylazine-zolazepam-tiletamine or zolazepam-tiletamine. Journal of Wildlife Diseases 39(3): 655-664.

Cattet MRL, Duignan PJ, House CA, St. Aubin DJ. 2004. Antibodies to canine distemper and phocine distemper viruses in polar bears from the Canadian arctic. Journal of Wildlife Diseases 40(2): 338-342.

Cattet MRL, Caulkett NA, Wilson C, Vandenbrink T, Brook RK. 2004. Intranasal administration of xylazine to reduce stress in elk captured by net gun. Journal of Wildlife Diseases 40(3): 562-565.

Daoust, P-Y, Cattet M. 2004. Consideration of the use of the .22 caliber rimfire Winchester magnum cartridge for instant killing of young harp seals (*Pagophilus groenlandicus*). Department of Fisheries and Oceans Canada Scientific Advisory Section Research Document 2004/072. (Available online at http://www.dfo-mpo.gc.ca/csas/Csas/English/Research_Years/2004/R_D2004_e.htm).

Cattet MRL, and Obbard ME. 2005. To weigh or not to weigh – conditions for the estimation of body mass by morphometry. Ursus 16(1):102-107.

Cattet, M.R.L., Bourque, A., Elkin, B.T., Powley, K.D., Dahlstrom, D.B., and N.A. Caulkett. 2006. Evaluation of the potential for injury with remote drug delivery systems. Wildlife Society Bulletin 34(3):741-749.

Cattet, M., J. Boulanger, G. Stenhouse, R. A. Powell, and M. J. Reynolds-Hogland. 2008. An evaluation of long-term capture effects in ursids: implications for wildlife welfare and research. Journal of Mammalogy 89: 973-990.

Cattet, M., G. Stenhouse, and T. Bollinger. 2008. Exertional myopathy in a grizzly bear (*Ursus arctos*) captured by leghold snare. Journal of Wildlife Diseases 44: 973-978.

Cattet M, Obbard ME. 2010. Use of hyaluronidase to improve chemical immobilization of free-ranging polar bears (Ursus maritimus). Journal of Wildlife Diseases 46(1): 246-250.

Macbeth BJ, Cattet M, Stenhouse GB, Gibeau ML, Janz DM. 2010. Hair cortisol concentration as a non-invasive measure of long-term stress in free-ranging grizzly bears (Ursus arctos): considerations with implications for other wildlife. Canadian Journal of Zoology 88: 935-949.

Wang K, Franklin SE, Guo X, Cattet M. 2010. Remote sensing of ecology, biodiversity and conservation: A review from the perspective of remote sensing specialists. Sensors 10: 9647-9667.

Chow BA, Hamilton J, Alsop D, Cattet M, Stenhouse G, Vijayan MM. 2010. Grizzly bear corticosteroid binding globulin: Cloning and serum protein expression. General and Comparative Endocrinology 167: 317-325.

Chow BA, Hamilton J, Cattet M, Stenhouse G, Obbard ME, Vijayan MM. 2011. Serum corticosteroid binding globulin expression is modulated by fasting in polar bears (Ursus maritimus). Comparative Biochemistry and Physiology Part A, 158: 111-115.

Ashley NT, Barboza PS, MacBeth BJ, Janz DM, Cattet M, Booth RK, Wasser SK. 2011. Glucocorticosteroid concentrations in feces and hair of captive caribou and reindeer following adrenocorticotropic hormone challenge. General and Comparative Endocrinology 172: 382–391.

Macbeth BJ, Cattet M, Obbard ME, Middel K, Janz DM. 2012. Evaluation of hair cortisol concentration as an indicator of long-term stress in free-ranging polar bears. Wildlife Society Bulletin (accepted for publication).

Timmins TL, Hunter AJS, Cattet M, Stenhouse GB. 2012. Incorporating spatial dependence in multiple linear regression models: an example with grizzly bear body size and environmental predictor variables. Geographical Analysis (in review)

11. PAPERS IN NON-REFEREED JOURNALS:

PUBLISHED:

Obbard, M.E., Cattet, M.R.L., Moody, T., Walton, L.R., Potter, D., Inglis, J., and C. Chenier. 2006. Temporal trends in the body condition of Southern Hudson Bay polar

bears. Ontario Ministry of Natural Resources – Applied Research and Development Branch. Climate Change Research Information Note No. 3. 8 pp.

12. TECHNICAL REPORTS RELEVANT TO ACADEMIC FIELD:

Cattet MRL. 2002. Drug residues in wild meat – addressing a public health concern. A CCWHC Technical Bulletin – Winter 2002.

Dunkley L, Cattet MRL. 2003. A comprehensive review of the ecological and human social effects of artificial feeding and baiting of wildlife. Report prepared for Parks Canada and Saskatchewan Environment, February 2003.

Cattet, M., Shury, T., and R. Patenaude. 2005. The Chemical Immobilization of Wildlife – 2nd Edition. Canadian Association of Zoo and Wildlife Veterinarians. 231 pp.

8) Additional Required Information

a) Other cases that I have been involved with in the previous 4 years

I have not been involved with other cases where I had to provide expert testimony over the past 4 years.

b) Statement of compensation to be paid for study and testimony

I expect compensation at $440 CAD per day, or $55 CAD per hour, which is to be charged only on a cost-recovery basis for my employer (Canadian Cooperative Wildlife Health Centre) when study/travel is done in lieu of my normal work, plus any expenses accrued for travel, meals, and accommodation. As of July 19, 2012, all study and report preparation has occurred outside of normal work hours, hence there are no charges-to-date.

c) Any special conditions, restrictions or requirements prior to my deposition, if my deposition is taken

If a deposition from me is required, I would request that it be scheduled to not conflict with any field research and/or vacation time that I have planned.

d) Expected compensation for deposition testimony

I expect compensation at $440 CAD per day, or $55 CAD per hour, which is to be charged on a cost-recovery basis for my employer (Canadian Cooperative Wildlife Health Centre), plus any expenses accrued for travel, meals, and accommodation.